Agricultural Policy Reform and Structural Adjustment: Historical Evidence from Korean Experience

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Summary: Korean agriculture has been facing several structural problems resulting from rapid structural changes since 1960's, some of which are preventing a smooth policy reform in accordance with the WTO regime. Political burden from rice monoculture, policy ineffectiveness from too large farm employment, and inflexibility in policy options from high dependency of farm household income on farm income are pointed out and discussed in detail.

KEY WORDS: direct payment, market price support(MPS), producer support estimate(PSE), rice monoculture, two-tier price scheme.

1. Introduction

Korean agriculture has experienced considerable structural changes along with economic development and policy reform in the process of trade liberalization. In the early 1960's, agricultural shares of GDP and total employment accounted for almost 50 and 60 percents respectively. It took only around four decades for the shares to fall to the current levels of 4.5 and 8 percents, each. Such rapid changes in Korea are regarded as a rare case in the world.

Besides its rapid structural changes, another reason that Korean case attracts our concerns is that Korea is among the net food importing developing countries which in general maintain protective positions in the ongoing multilateral trade negotiations.

The purposes of this paper are to provide Korean experience in agricultural policy evolution and its structural consequences, and to infer some implications for future agricultural policy reform. To meet the purposes, this paper first examines how the major policies have evolved in Korean agriculture. The historical backgrounds, implications of the policies on Korean agriculture will be briefly investigated at this stage. Second, this paper reviews the current structural features of Korean agriculture resulting from the policies. And finally it suggests some implications for the future agricultural policy reform.

2. Agricultural Policy Changes in Korea

2.1 Agricultural Policies at the Early Stage of Economic Development (Pre-1970's)

During the time of early stage of economic development, all the government policies were targeted to achieve economic growth. Agricultural policy also had to be auxiliary to overall economic growth policy. At this time of high inflation caused by overall supply shortage in the economy, price stabilization was important precondition for economic growth and hence it was pursued as an important macroeconomic policy objective. In agriculture, therefore, government tried to maintain agricultural prices, particularly rice price, as low as possible.

2.1.1 Low Grain Price Policies

During 1960's rice as a single commodity had taken very large weights in consumer price index, accounting for around 200 out of total weights, 1000. In this context, it was believed that low rice price would help improve competitiveness in the economy by lowering wage rates. The purchase price for rice, according to the Grain Management Law enacted in 1950, used to be set very low, sometimes even lower than production cost at the very beginning stage of economic development in early 1960's.

2.1.2 PL 480

With the disincentive low grain price policy, combined with poor agricultural infrastructure, domestic food had always been in short supply. Foreign aid from abroad was one way to solve the serious supply shortage problem in the short run. In this period, the grain imports by the U.S. PL480 program(1956-1970) had greatly contributed not only to relieving food shortage but to inflation control, and hence to social stability and economic growth.

The items imported under the PL480 program were mainly cotton and grains such as wheat, barley except for rice. However, the continuous surge of PL480 items has brought about the structural vulnerability of domestic production basis for those products. In this context, the PL480 program had served as an opportunity for the Korean agricultural structure to be centered on rice farming system. However, the Japanese colonial policy(1910-1945) is generally regarded as the most important momentum for forming the current rice-dominant farming system. Korea under the Japanese colony was forced to serve as a supplier of staple food, mainly rice, to Japan. Thus, the Japanese colonial agricultural policy had been targeted to enhance rice production through the skewed investment toward rice production.

2.1.3 Land Reform

Land reform program was implemented in order to establish modern land ownership system by enacting Land Reform Act in 1949. The long-lasting tenant system was abolished so that farmers could have ownership for the land where they had been cultivating. Farmers only could own the arable land. At the same time, the law restricted the maximum farm size to 3 hectares, and prohibited renting or leasing of farmland. Although the restriction on farm size was the reflection of the socio-economic condition aiming at equitable distribution of land, such land reform brought about efficiency problem by having built the small scale farming structure in Korean agriculture.

2.2 Protective Agricultural Policies (1970's - 1980's)

From late 1960's, the disincentive agricultural price policy had been seriously challenged. In the process of economic development, the gaps between agriculture and manufacturing sector, and rural and urban areas had been continuously expanded due mainly to the rapid industrialization and urbanization. Large migration and exodus from rural area entailed. Domestic production slowed down, and hence could not meet the rapidly increasing food demand.

Now policies that not only support farm income but also increase production were necessary. The goals of agricultural policy in this period were, therefore, to support producer income, to achieve self-sufficiency in food, and to maintain balanced development between rural and urban areas including the improvement of rural living environment.

2.2.1 Two-tier Price Scheme (Government Purchase Program)

With the low purchase prices before 1970's, farmers had been discouraged to increase rice production. Government also failed to secure the sufficient quantity necessary for stabilizing prices or other policy objectives. In 1968, Korea abandoned the low rice price policy, and instead in 1970 the government introduced the two-tier price scheme. The main objective of this policy is to protect both the producers and consumers.

2.2.2 Productivity Enhancement Programs

Small sized farmland per household, irregular shape of paddy fields, poor conditions of farm road, irrigation and drainage systems, and fragmentation of holdings have been the most frequently mentioned features on Korean farm land. To support large population with small and poor conditioned farmland, productivity-enhancing policies were implemented focusing on agricultural infrastructure improvement such as farm size enlargement, readjustment of arable land, development of water resource, improvement of drainage and irrigation system.

The government agency (Rural Development Corporation) converted the farming type from non-farmer landowners, retiring farmers, and part-time farmers into full-time farmers or agricultural corporations using various ways such as purchase and resale, lease and sublease, and loans. Also, rearrangement and exchange of plots between neighboring farmers have been strongly encouraged by the government to consolidate scattered land for production efficiency.

To prevent reduction in arable land in the process of industrialization and urbanization, all arable land available were classified into two different types, i.e. 'absolute arable land' and 'relative arable land'.

The absolute arable land was not allowed to be used for any purposes other than agricultural production.

2.2.3 New Technology Adoption

Early in the 1970's, high yielding rice variety named as Tong-il Rice was developed and its cultivation was highly encouraged by the government in pursuit of rice self-sufficiency. The development and nationwide spread of high yield rice variety played a significant role in increasing domestic rice production, and hence achieving self-sufficiency in staple food. Production of Tong-il Rice had been sharply increased up to 1978, thereafter it had continuously declined and in 1991 completely disappeared because it could not satisfy Korean consumers taste.

Despite the technological innovation of developing HYV, it had some limitation in that its innovation and adoption were initiated by the government rather than induced from farmers for the purpose of achieving rice self-sufficiency. Hence, after the rice self-sufficiency objective was achieved in 1991, attempts for further innovation of HYV were not actively made.

2.3 Toward Market Oriented Agricultural Policies (Since late 1980's)

Although Korea continued to pursue import liberalization since the end of 1970's, Korean agricultural markets still remained highly protective, judging from international standard. However, the environment surrounding Korean agriculture has dramatically changed since late 1980's, domestically and internationally. Having faced strong pressure internationally to lower import barriers substantially, Korea had no choice but to change fundamental agricultural policy toward being more market oriented. Indeed, the UR was the key force that made Korean agriculture move forward rapidly. The primary policy goal was to enhance the competitiveness for agricultural products by improving efficiency. Agricultural restructuring and readjustment were strongly required.

2.3.1 Modification Envisioned for Long-lasting Domestic Support Program

There have appeared a couple of factors that have required changes in domestic support program. According to the AMS(Aggregate Measurement of Support) reduction commitment in WTO Agreement on Agriculture, the quantity and/or price of rice are subject to reduction. Also, a serious rice surplus problem is expected due mainly to the high level of rice productivity and continuously decreasing trend of per capita rice consumption. In this circumstance, the domestic policy of government purchasing program needs to be changed in such a direction as reducing government intervention and recovering market forces.

2.3.2 Direct Payment Programs

With the launch of WTO in 1995, Korea's agricultural policy seemed to change more rapidly toward market orientation. Direct payment program began to be introduced although it is not completely in conformity with the Green Box category of the Agreement on Agriculture. Environmental aspect of agriculture was also emphasized for the purpose of pursuing sustainable agriculture and environmentally friendly agriculture. Among the direct payment programs newly developed so far are payment for producer retirement, payment for environmental program, and payment for preserving rice paddy field, some of which are of the nature of Green Box policy others not. Korean agricultural policy is now transforming from market intervention policy to direct payment and government service which are permitted under the WTO Agreement on Agriculture as Green Box.

2.3.3 Further Land Reform

As time goes by, the small farm size has long been regarded as an obstacle to increase the efficiency in agricultural sector. As a result, the Land Reform Act was first revised in 1994 and further in 1996 and was finally replaced by Farmland Act enacted in 1996. In the Farmland Act of 1996, the limit on farm size was rescinded in the specially designated area for agricultural development, the Agricultural Promotion Zone which covers 61.2 percent of total farmland. The upper limit of land ownership was enlarged up to 10 hectares, and marginal land in productivity was permitted to change its use for non-agricultural purpose. It was also made possible for agricultural corporations to own farmland.

2.3.4 Agricultural Investment and Loan Program

In 1992 when the UR negotiation was about to be finalized, the Korean government decided to implement a large scaled 'Agricultural Investment and Loan Program' in order to cope with the coming agricultural market opening through the improvement of agricultural production structure. Since then government budget has been dramatically increased for that program.

Total fund of 42 trillion won was appropriated for the program during the period of 1992 to 1998. Additional 45 trillion won was earmarked to extend the program until 2004. This enormous fund was

invested in such projects as mechanization, readjustment of arable land, water resource development, agricultural facilities modernization, enlargement of farming size, technological development, bringing up of the elite farmers group, improvement of marketing structure, diversification of income sources, and improvement of rural life environment and welfare.

However, the effectiveness of the agricultural budget outlay has not been evaluated as successful. Considerable amount of the budget was not used for the actual investment or loan purposes, but instead for the compensation for past policy failure.

3. Structural Consequences of Agricultural Policies

3.1 Rice-dominant Farming System

Rice takes dominant positions in both agricultural production and food consumption in Korea. In 2002, 1,138 thousand hectares (61%) out of total cultivated land area of 1,862 thousand hectares were allocated to rice farming. According to 2000 agricultural census, 787,451 households (57%) out of 1,383,468 farm households are cultivating paddy rice of which 512,158 households are producing rice on full-time base.

Table 1: Rice Farming as a Major Income Source

Year	Farm household income (A) (thousand won)	Income from farming (B) (thousand won)	Income from rice farming (C) (thousand won)	Ratio (%)	
				C/A	C/B
1970	256	194	88	34.4	45.4
1980	2,693	1,755	741	27.5	42.2
1990	11,026	6,264	3,097	28.1	49.4
1995	21,803	10,469	3,984	18.3	38.1
2000	23,072	10,897	5,671	24.6	52.0
2001	23,907	11,267	6,051	25.3	53.7

Sources: Ministry of Agriculture and Forestry, 『Major Statistics on Agriculture』, 2002.

Consequently, rice, as a single commodity, accounts for 33 percent of total agricultural production values, and 54 percent of average farm income per farm household. In addition, about 32 % of per capita energy daily required is provided by rice. The rice dominant diet and agricultural production pattern have been formed from ancient times mainly due to the climate factor resulting from the geographical location in the Asian monsoon climate zone.

Table 2: Producer Support Estimates for Korea

	PSE(bil. Won)		Share(%)	
Year	1986-88	2002	1986-88	2002
Total PSE	9,675	22,655	100	100.0
Rice	4,541	8,268	46.9	36.5

Beef and veal	508	1,378	5.3	6.1
Milk	328	1,134	3.4	5.0
Pig meat	311	924	3.2	4.1

Source: OECD PSE data base.

In this context, rice inevitably has taken the central position in government policies for a long time. Even in the UR negotiations, rice was excepted from 'tariffication'. As a result, rice is the only product under quantity restriction now. Moreover, if we see the government support in terms of Producer Support Estimate(PSE) in 2002, more than one third of Korea's total PSE are attributable to rice.

3.2 Large Farm Employment with Small Farm Size

The Korean government has pursued policies, for a long time, of expanding farm size to improve production efficiency. The number of farm households with farm size larger than 3 hectares continued to increase while that of other smaller sized farm households has decreased. The government's efforts seem to be partly rewarded, though not enough. Combined with these policy effects, the severe competition after UR might also have made some contributions to the expansion of large sized farm households. However, we should note that the number of farm less than 1 hectare is still dominant with over 60 per cent of total farm households.

Table 3: Distribution of Farm Households by Farm Size (unit: households)

	1960	1970	1980	1990	1995	2000	2002
≤ 0.5 ha	815,344	775,234	611,698	482,703	432,982	454,775	432,802
0.5 ~ 1.0ha	837,414	824,994	747,579	544,457	432,107	378,655	344,256
1.0 ~ 3.0ha	656,837	763,312	736,756	672,537	541,293	465,324	405,402
3.0 ha ≤	19,533	37,670	31,630	43,533	70,445	84,714	78,086
average per household(ha)	0.900	0.925	1.018	1.194	1.323	1.365	1.454

Source: Ministry of Agriculture and Forestry, 『Agricultural Census』, 1960 -2000, 『Major Statistics on Agriculture』, 2002.

The ultimate limitation to farm size expansion seems to be the large farm employment. Despite the rapid decrease in farm population over last four decades, too large population is still employed in agricultural sector. The number of Korean farmers is almost the same as the total number of Germany, France, and UK combined. The implications of large farm employment for policy reform will be discussed later.

Table 4: Populations, Employments, Arable Land per Farmer, and International Comparison of Time Required for Structural Changes

Countries	Total population (2000) (thousand)	agricultural employment (2000) (thousand)	arable land per farmer (ha) (2000)	ag. share of GDP			ag. Share of employment		
				year of being at 40%	year of being at 7%	years required	year of being at 40%	year of being at 16%	years required

UK	59,634	537	10.9	1788	1901	113	1800	1868	68
Netherlands	15,864	248	3.7	1800	1965	165	1855	1957	102
USA	283,230	3,027	58.5	1854	1950	96	1897	1950	53
Germany	82,017	1,013	11.7	1866	1958	92	1900	1942	42
Denmark	5,320	111	20.5	1850	1969	119	1920	1962	42
France	59,238	899	20.5	1878	1972	94	1921	1965	44
Japan	127,096	2,769	1.6	1896	1969	73	1940	1971	31
Korea	47,275	2,288	0.8	1965	1991	26	1977	1991	14

Source: OECD data base and Lee(1997)

3.3 Overflow of Aged Farm Labors

The rapid structural changes mainly due to the fast overall economic growth for last four decades as indicated in the Table 4 have led to serious 'growth fatigues' in agricultural sector. One of the fatigue symptoms lies in the overflow of old farmers. Currently, almost 50 per cent of total Korean farmers are 60 years old and above.

In the early stage of economic development, large out-migration of agricultural labors, in particular the labors with high productivity, has been supported by dual economic development theories. It had been true for Korea through 1970s. However, in Korea, since the early 1980s the migration has not been supported as the most important factor for the rapid drop of farm labor. Rather, the natural exits by death or retirement have largely contributed to the decrease of farm labors. On the other hand, the relative employment expansion of non-farm sector has been largely supplemented not by migration from rural sector but by new young entrants(Lee(1997)). This implies that the rural old aged labors have become factors specific to agriculture which have very limited mobility between agriculture and other sectors.

The dominant role of natural factors like death or retirement in the reduction of farm labor has very important implications for the aging process of farm labor. The rates of death or retirement are relatively stable and are likely to be independent of the changes in agricultural share of total economy. Under the time of rapid shrink of agricultural share in the economy, stable exit rates of the aged labors may cause the overflow of the aged labors, which in turn hinders young labors from entering agriculture. The speed of aging process in this case is highly related with that of shrinking process of agricultural share. The policy implication of this case will be discussed in detail later.

3.4 Deterioration of Agricultural Terms of Trade

From the early 1990s, right before the implementation of WTO agreements and afterward, the slight increase in average price received by farmers is attributed to the grain sector, especially rice which has been under government price support programs. The increase in rice price was substantial even after the Uruguay Round. Without grain price increases the average price for the agricultural products would definitely have declined as usual. However, the prices for vegetable, fruits, livestock animal,

which are also important income sources for Korean farmers, have shown sharp declines or fluctuations.

Input prices used for agricultural production have increased relatively fast. Especially, the prices for fertilizer, pesticide, farming machinery, and wage have increased as mush as approximately 50 percent after 1995. As a result, the terms of trade, defined as the ratio of the prices received by farmers to the prices paid by farmers, have been deteriorated after 1995, falling down to 83.5 in 2001. It would be rather natural that prices for agricultural products fall as import liberalization proceeds. But the input prices are expected to continuously increase due mainly to the imperfect market structure, and hence the falling trend of the terms of trade does not seem to be reversed in the near future.

Table 5: Price Indexes Received and Paid by Farmers, and Terms of Trade

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Price Indexes Received	84.5	84.7	91.7	100.0	105.2	102.2	101.9	108.5	109.6	116.4
Rice	84.9	89.1	91.5	100.0	114.9	116.7	124.5	131.4	137.8	135.3
Barley	90.7	95.2	100.0	100.0	100.0	100.0	105.5	110.7	115.2	119.8
Soybean	69.3	78.4	86.3	100.0	103.9	102.7	111.3	142.8	136.0	122.8
Vegetable	80.7	79.9	88.9	100.0	104.6	103.1	105.2	95.7	94.8	106.1
Fruits	65.8	66.4	93.5	100.0	92.5	93.9	93.4	102.0	80.3	61.7
Livestock(Animal)	96.2	88.4	91.0	100.0	100.2	88.3	76.7	96.6	101.1	121.0
Flower	66.0	78.4	83.2	100.0	90.1	93.8	102.6	113.0	95.7	91.2
Price Indexes Paid	90.2	90.9	94.4	100.0	104.3	106.7	118.0	121.2	127.5	139.4
Fertilizer	95.7	96.9	96.9	100.0	100.3	105.8	149.7	149.6	149.6	149.9
Pesticide	95.5	97.9	99.0	100.0	103.7	108.0	140.0	130.7	129.4	132.6
Farming Machinery	130.7	100.6	99.0	100.0	101.6	104.2	153.4	153.8	154.0	154.2
Feed	94.8	95.4	95.6	100.0	104.8	110.5	136.4	109.3	104.8	117.6
Wage Rates	85.4	90.5	93.6	100.0	109.7	116.5	110.5	124.2	140.8	149.1
Terms of Trade	93.7	93.2	97.1	100.0	100.9	95.8	86.4	89.5	86.0	83.5

Source: Ministry of Agriculture and Forestry, 『Major Statistics on Agriculture』, 2002.

3.5 Expansion of Income Disparity

There was a big change in farm and farm household income growth pattern about the time of 1995. Before 1995 both farm and farm household income grew at two digit annual growth rates. However, the growth rates have begun to seriously decline since 1995. In fact, the growth rates of farm and farm household incomes even took some negative values in 1997 and 1998. Considering that the number of farm household has been decreasing at 3 percent annually on average, the stagnation of farm and farm household income has been even more serious. Several factors might be responsible for such a serious stagnation of farm and farm household income. Market opening due to the UR, and financial crisis in 1997 might be the most influential factors. The most sudden drop to negative growth rates in 1998 might be due to the financial crisis.

Table 6: Changes in Farm Household and Farm Income

	1993	1994	1995	1996	1997	1998	1999	2000	2001

Farm Household Income (A) (1000 won)	16,928 (16.7)	20,316 (20.0)	21,803 (7.3)	23,298 (6.9)	23,488 (0.8)	20,494 (-12.7)	22,323 (8.9)	23,072(3 .4)	23,907 (3.6)
Farm Income(B) (1000 won)	8,427 (14.6)	10,325 (22.5)	10,469 (1.4)	10,837 (3.5)	10,204 (-5.8)	8,955 (-12.2)	10,566 (18.0)	10,897(3 .1)	11,267 (3.4)
B/A(%)	49.8	50.8	48.0	46.5	43.4	43.7	47.3	47.2	47.1
Urban Household Income (C) (1000 won)	17,734	20,416	22,933	25,832	27,448	25,597	26,697	28,643	31,501
A/C(%)	95.5	99.5	95.1	90.2	85.6	80.1	83.6	80.6	75.9

Note: Numbers in parentheses are annual growth rates(%).
Sources: Ministry of Agriculture and Forestry, 『Major Statistics on Agriculture』, 2002.

The stagnation of Korean farm household income is also clearly identified by comparing it with the urban income. Since the late 1980s the farm household income has lagged behind the urban income. However, the gap continued to further widen after 1995. In 2001, the farm household income fell to 76 percent of urban household income. Under the continuing deterioration of agricultural terms of trade, off-farm income might contribute to narrowing the gap between rural and urban household income. However, in Korea its contribution is limited because, despite several political efforts for a long time, Korea still has relatively high dependency on farm income compared with other Asian countries of similar agricultural structure.

Table 7: Share of Off-Farm Income in Farm Household Income

year	Korea		Japan		Taiwan		USA	
	A	B	A	B	A	B	A	B
1985	5,736	2,037(35.5)	6,916	5,850(84.6)	310.6	233.7(78.2)	-	-
1990	11,026	4,762(43.2)	8,399	7,235(86.2)	503.8	402.9(79.9)	39,007	33,265(85.3)
1995	21,803	11,334(52.0)	8,917	7,474(83.8)	871.1	699.0(80.2)	44,392	39,671(89.4)
2000	23,072	12,175(52.8)	8,280	7,176(86.9)	917.6	756.5(82.4)	62,019	59,228(95.5)
2001	23,907	12,640(52.9)	8,022	6,988(87.1)	881.3	718.1(81.5)	64,465	58,894(91.4)

A=farm household income
B=off-farm income(transfer income included)
Numbers in ( ) are the ratio of B to A (%)
Sources: Ministry of Agriculture and Forestry, 『Major Statistics on Agriculture』, 2002.

4. Implications for the Future Policy Reform

4.1 Current Structure of Agricultural Support Policy

Korean agriculture is characterized by high level of government support. Although the percentage producer support estimate(%PSE), the government support share of total farm receipts, fell from 75% in 1990 to 66% in 2002, it is still double the OECD average (OECD 2003).

Table 8: Structure of PSE (unit: billion won)

Year	Producer Support Estimate (PSE)		Market price support	Payments based on area planted/animal numbers	Payments based on input use	Payments based on input constraints	Payments based on overall farming income
	Total PSE	% PSE					
1986	8,362	66	8,315(99.4)	0	32(0.4)	0	15(0.2)
1990	13,729	75	13,207(96.2)	0	260(1.9)	9(0.1)	252(1.8)
1995	19,442	72	18,406(94.7)	12(0.1)	725(3.7)	60(0.3)	239(1.2)

2000	22,018	67	21,057(95.6)	21(0.1)	553(2.5)	27(0.1)	359(1.6)
2002	22,655	66	20,649(91.1)	445(2.0)	793(3.5)	21(0.1)	747(3.3)

Numbers in ( ) are the share of market price support or each payment in total PSE.
Source: OECD PSE/CSE database, 2003.

The producer support estimate(PSE) consists mainly of market price support (MPS) through domestic and trade policy measures. Even though the share of MPS is on the decreasing trend, it is still about 91 per cent of total PSE in 2002. The remaining 9 per cent is accounted for by the support through budgetary payments. However, about two thirds of the total budgetary payments are performed in the form of supports based on input use and production scale which have been proved to be the most production and trade distorting measures.

The MPS has been the most powerful and easy measure for the Korean government to adopt in order to pursue multiple agricultural policy objectives simultaneously with limited budget. Korea, without clearly specifying the individual agricultural policy objective, has adopted the MPS as a policy instrument aimed at agriculture, farmers, and rural area simultaneously, expecting that increasing agricultural production through price supports could vitalize rural area as well as improve farmers' income.

4.2 Directions for Future Policy Reform

The Korean key policy instruments based on MPS are grouped into a policy category to be subject to reform in the ongoing WTO multilateral trade negotiation. Following this international trend, many discussions on the directions for future policy reform are underway within the Korean government. The major points of the discussions can be summarized as in Table 9.

Table 9: Future Policy Structure under Consideration

. For agriculture → Industrial policy
  - market orientation, competitiveness
  - pro-environment and high quality products
. For farmers → Income policy
  - expansion of direct payment
  - increase in off-farm income
  - enhancement of income safety net
. For rural areas → Community development policy
  - rural community as an amenable living space
  - expansion of welfare infrastructure
  - enhancement of social safety net

4.3 Limitations for Policy Reform

Irrespective of the policy objective, the rationales for future government interventions are likely to be restricted to those concerned with farm household income issues, and those related to correcting market failures in agricultural sector(OECD(2002)). And all policy instruments are recommended to be implemented in the way of avoiding production or consumption, and hence trade distortions. One

of the most promising policy instruments in this line would take the form of direct payments based on general budgetary payments, clearly targeted by the objectives, conditioned by strict implementation criteria, and limited by the scope and amount of payments(Anton and Cahill(2003)). Thus, the reform process is likely to incur big budget burden to the government. In this context, several structural factors which prevent a smooth policy reform exist in Korean agriculture.

4.3.1 Limitation from Political Feasibility

Rice monoculture in terms of resource allocation and income source has been a salient feature of Korean farming system. Almost all farmers have keen interests in rice. As a result, rice has become a kind of political good rather than a commercial good. Any trial of rice policy reform like government purchase price cut leads to serious protests from farmers. In general, the protests have seldom been overlooked by Korean National Assembly which has the right to finally determine the rice purchase price proposed by government. In the consideration of the skewed allocation of agricultural resources towards rice farming, without rice policy reform, total agricultural policy reform cannot be accomplished. Under the surge of cheap foreign fruits or vegetables, especially from China after its accession to WTO, several government efforts to convert rice farming to other crops cultivation have failed.

4.3.2 Limitation from Too Large Farm Policy-targeting Group

This limitation is related with policy effectiveness. As we have seen before, Korea has a very large farm employment. The share of agricultural employment in total civilian employment is near 10% that is much higher than the OECD average and is almost double the average of the advanced developed countries. With this large size of farmers and limited budgets, any policies based on budget payments would inevitably be diluted in effects, making it very difficult to convert MPS to direct payments.

In addition to the large employment, the overflow of the old farmers causes additional problems. First of all, land mobility is highly restricted by the old farmers, which is partly responsible for high land price. Almost half the rice production cost is attributable to rent in Korea. Thus, the high land price is regarded as the most restrictive factor in achieving price competitiveness of rice industry. Old farmers who have very limited mobility between agriculture and other sectors cannot but stick to agriculture, resulting in very rigid land mobility. With this rigid land mobility, it is very difficult to improve the structure of small scale farming system and hence to improve efficiency and competitiveness, which becomes a reason for continuously calling for maintaining current support policy system.

Table 10: Labor Hours Required for the Cultivation of Major Products (hours / 10 ares)

	Rice	Chinese Cabbage	Red Pepper	Onion	Lettuce(protected farming)	Apple
1981	93(100%)	176(100%)	249(100%)	220(100%)	837(100%)	415(100%)

1995	35(37%)	140(80%)	243(98%)	193(87%)	724(87%)	334(81%)
2001	28(30%)	101(57%)	205(82%)	136(62%)	688(82%)	196(47%)

Source: Korea Rural Development Administration

Second, they tend to stick to rice farming, which makes it difficult to convert rice farming to other items which have less political burden. The labor saving technology has progressed most prominently in rice farming than in any other farming. In this technological condition, the old farmers cannot help choosing rice farming with their limited labor forces. Over the last two decades, the labor saving technology has progressed in such a way as almost 70 per cent of labors required to cultivate rice could be saved, which is the most prominent progress compared with the technology progress in any other crops.

4.3.3 Limitation from Inflexibility in Policy Options

Increasing off-farm income could be an important policy option for government to adopt in the process of agricultural policy reform. As we saw earlier Korean farmers still derive most of their income from farming. Several government efforts to increase off-farm income since early 1980's have not been rewarded satisfactorily. Currently the circumstances to enhance off-farm income are increasingly getting worse. The Korean rural areas do not have comparative advantages in terms of wage or land prices to attract outside firms which can serve as off-farm income sources compared with other neighboring countries like China. Currently, many small or medium sized firms tend to choose their plant site in foreign country rather than in Korean rural area. It is generally believed that Korea has lost opportunity of increasing off-farm income, and hence of securing useful policy option which can relieve the burden of government accompanying in the process of policy reform.

5. Conclusion

From the early discussions, the most urgent precondition for Korea to reform current agricultural policy is to reduce the size of policy-targeting group, i.e. farmers. If Korea has manageable size of policy-targeting group the, difficulties resulting from political power of farmers and inflexibility in policy options will certainly be reduced while the effectiveness of policy will be increased.

Considering that the large farm employment consists of old farmers of which the decrease rates are very stable and the mobility to other sectors is limited, it seems to take some time for Korea to have a reasonable size of farm employment comparable to other advanced developed countries so that some policies for structural adjustment may be implemented effectively. The only way to make it shorter is that government takes some policy initiatives like direct payments for early retirement, or resource transfers to more productive farmers. However, in the short run, with large number of farmers budget burden to government is unaffordable. That's the main reason why Korean government demands

some grace period to reduce the number of farmers to a certain politically feasible level through securing developing country status in the multilateral trade negotiations.

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